

HYGIENE OF SCHOOLS.

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THE
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OR

EDUCATION

MENTALLY AND PHYSICALLY CONSIDERED

BY

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"La santé est le facteur que fait valoir les zeros de l'éducation."
MONTAIGNE.

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PREFACE.

It is somewhat remarkable that no English author has written on the subject of School Hygiene, or given us any authentic data for the guidance of those who enter upon the grave responsibility of education; especially that part of it which relates to the physical development of youth.

It is true, that MONTAIGNE, LOCKE, FRÆBEL and LANCASTER have laid down certain rules, which differ more or less in themselves; and as a whole are indefinite and unsuited to the altered circumstances of the present age.

The object of this little work, is to set forth the opinions of recognized authorities on this subject, contrasting them, and adapting them to our present social condition; so as to eliminate the maximum of good, and to balance evenly their mental and physical relation in the important work of converting the child into the man.

Food, exercise, clothing, sleep, recreation, and punishment, all pass rapidly in review; as well as the important elements of air, light, heat, and ventilation; in their influence to produce health on the one side, and deformity on the other.

It being an ascertained fact that the deformities incident to school life prevail to the alarming extent

of more than 40 per cent. in girls, and 20 per cent. in boys ; it becomes apparent that the School Board is only one step in the right direction, which must ultimately and certainly lead to the appointment of a Minister of Public Instruction, who will be held responsible for the education of the whole community. That this trifling contribution may in the slightest degree tend to hasten that desirable result is the ardent desire of the author.



THE HYGIENE OF SCHOOLS.

“ La santé est la facteur que fait valoir les zeros de l’éducation.”
MONTAIGNE.

PART I.

*Physical and Mental Education—Their reciprocal influence
—Various opinions relating thereto—Montaigne—Locke
—Hufeland—Froebel—Dupanloup—Reveillé Parise—
Fonssagrives—Raoul—Guillaume—J. Lancaster—
Buffon and others—including Hippocrates, Celsus,
Georgius, Plato, Pythagoras—as well as its influence on
Michael Angelo, Haydn, Byron, Lesage, Rousseau,
Voltaire, Hoffmann, Addison, Sheridan and Pope.*

It is my intention to write in few and unpretending words the principles of Hygiene, as applicable to young people, and especially to schools, so that parents, teachers and pupils may take up this little work, and find something of interest to them all.

I must first say a word about education—what is it? I reply it is the eliciting, the drawing out, the development of the mental and physical condition.

MONTAIGNE says, with great truth, “that those who separate the education of the mind, from that of the body, do a great wrong.”

Monsieur DUPANLOUP, in his celebrated work published thirteen years ago, compared “education to a

skilful gardener, who places the plant confided to him, in a good soil, sprinkles it with water, surrounds it with favorable conditions, nourishes it and shelters it with care, that it may produce its fruits or flowers in due season," and as education is the handmaid who undertakes the grave work of transforming the child into the man, it must be considered under its mental as well as its physical conditions.

It is, however, the province of Hygiene to confine itself as closely as may be to the physical aspect of education, and yet as we pass along, we shall be compelled to look over the border which separates the one from the other.

Hygiene is, literally speaking, that part of medicine which relates to health, or in other words, the education of the body; but it is so surrounded by the moral and social conditions of life, that practically, to some extent they must be considered together.

I pass by purposely the systems of ancient philosophers who made athletic exercises the first condition; and whilst acknowledging their advantages we have to thank HUFELAND and others, HUFELAND especially, for bringing physical exercises into the legitimate domain of physic.

There can be no doubt that Germany is far in advance of us in the education of children, and that MONTAIGNE and LOCKE, HUFELAND and FRÖEBEL are the best authorities on the subject; all who have written since have promulgated their ideas, or made them the subject of comment and discussion.

“When I might make myself feared, I much preferred to make myself loved,” was the touching expression of a learned Greek, and that our schools of the present day are not “gaols of captive youth” we owe to the essays of MONTAIGNE and those who followed him.

It is true that, notwithstanding his protest against corporal punishment, we have “tunding” at Winchester and other places, but such barbarous usages must die out before the advancing intelligence of the age.

Though LOCKE wrote his essay on education a century after MONTAIGNE, it contained little that was new, yet its influence in England exists to the present day.

MONTAIGNE was a true philosopher, when he said that “Health is the factor, which gives value to all the zeros of education,” and the learned professor at Montpellier supports the argument. He says, “The young Spartan was deposited naked in his father’s shield which served him for a cradle, whilst the young Parisian is smothered in down and covered with lace,” the one goes out bare-headed, bare-footed and badly clothed, whilst the latter has such a dread of air that he seldom comes out without a *cache-nez* or a comforter.

We must keep a middle course: there is an inconsiderate kindness which Monsieur FONSSAGRIVES calls a “blind tenderness” which makes our children invalids (and he further remarks that all rich in-

valids are invariably despots) which is quite as bad as the brutal severity which makes man stolid and robust.

We see healthy children in our streets covered with thick clothing so that they can hardly breathe, and others of a weakly frame, uncovered about the neck and legs, and yet there are more colds caught by precautions than by carelessness.

The same writer states that he knew the fact of a person, who, having left off one of his braces, caught a cold in consequence, and goes on to inveigh against children wearing night caps.

LOCKE says, that if we had been accustomed to go bare-headed from our birth, and to wrap our hands in furs, it would be quite as dangerous to wet the hands, as many people consider it now to be to wet the feet.

“The human flower, is that which most needs the sun.” Children kept in doors are hot-house plants, and what has been said of the sun may be said of the air also, for without this, no good physical education can be accomplished, for good air is as necessary as good food.

Education is not a science but an art, which depends less on its absolute value, than on the judgment with which it is employed.

J. J. ROUSSEAU said, a century after LOCKE, that all is good as it comes from the hand of its Maker, but in the hands of man it degenerates.

FRÖEBEL who was born in 1782 (and followed

HUFELAND) was a pupil of Pestallozzi. He says, the "Instructor is the high priest of nature," which is only a paraphrase of what HIPPOCRATES said many centuries before, "*Medicus naturæ minister et interpretes.*"

People in those days had a high opinion of a teacher; but in this utilitarian age of ours it has sadly retrograded:—Not that it is less honorable, but that character and attainments are put into the balance against the sordid element, which, as SHAKESPEARE expresses it, "may be grasped thus," and so talent, assiduity and ability, retire into the cold and depressing shades of poverty and neglect.

The showy charlatan who tells the ignorant parent that his child can be made a prodigy, and "puts on" all kinds of "extras" for the purpose of showing the care and attention bestowed upon him, is usually what is called successful; till in after years the plain fact becomes evident, that the health of the child has been neglected, and he has been sent into the world uneducated. Mons. RAOUL sums up the ordinary hygienic conditions of schools thus :

"Health," he says, "is the last pre-occupation of the schoolmaster at present. Narrow rooms, low, damp, deprived of sun, saturated with bad odours, sometimes hot and close, or subject to draughts, flat desks, seats too high or too low, clothing tight round the neck, the waist, or the legs, positions dangerous for the lungs, the stomach and the circulation, the spinal column and the brain, restraint in one

position too long, brilliant colours, dazzling reflections of light, either in quantity or direction—these are the conditions in the midst of which, the *great majority* of children are brought up at schools and colleges, and even under the roofs of private families,” and the result is that up to 10 years of age, the mortality in Savoy is 39 per cent., in England 42 per cent., in Holland 43 per cent., in Prussia 48 per cent., and in Bavaria 50 per cent., taking the medium therefore of 44 per cent. it follows that nearly one half of the children die before they are 10 years of age.

It would be quite another question if we speak of the incurable debility, chronic affections, germs of mortal illness, or of premature old age, brought on by the continued violation of the elementary principles of Hygiene.”

“In a pure air, a suitable temperature indoors or out,” pleasant occupation varied and alternated so as not to fatigue the body or mind, gymnastics, walks, play of various sorts, and last, not least, the continual surveillance of a superintendent; these are the circumstances to prevent and cure a multitude of the ailments of youth.

Fresh air and study made attractive by manual work, by toys, by vocal and other exercises, are the first principles of Hygiene in elementary instruction.

In our day, every one follows his own personal wish in the education of his children and is perfectly

indifferent to the principles of philosophy and hygiene.

The question is not so much how to produce that “*summum bonum*” of human development “a sound mind in a sound body” as to ride a sort of steeple chase towards the object we wish to attain, in the feverish race of the present generation.

“Hygiene is sacrificed to ambition,” says a learned French author, and God knows what kind of men, these debilitated, nervous, used-up children, promise to society, for whom everything has been done, *except to make them vigorous and healthy*.

Reform is urgent. It begins already to fill the horizon and soon there must be a more equitable arrangement between the work of mind and muscle, whether the child be destined for a profession or manual labour.

Air, water, light, these three elements of health, which nature has so bountifully given us with liberal profusion, ought to be supplied to every child: in a word—baths and gymnastics are of the utmost importance in developing the health and vigour of children, and yet baths, as a rule, are unknown; and resorted to as exceptions at uncertain periods and under special conditions.

“*Ou ne doit par former l'esprit aux depens du corps.*” HUFELAND.

Let us go back thirty or forty years and call to mind the young men of that day. “I remember” says Mons. FONSSAGRIVES, “that I saw when I was a child,

fine young men of twenty, with a quiet countenance, fresh colour and honest face, sound in health, who did their work steadily and well." They are replaced now-a-days I was about to say, by children—men of sixteen, thin, nervous, pale, perhaps married; led on by ambition to their destined career, some drop by the way, a few, thanks to their natural vigour, resist these senseless trials. The majority grow up attenuated, the body destroyed by anticipated efforts and the intellect henceforth incapable and unfruitful.

"The degeneration of man is a sad reality," he goes on to state the causes, and winds up by truly saying that "by weakening the physical condition we destroy proportionately the moral force of the character."

To the philosopher this is sad indeed, but still there is hope for the better.

The question, however, more immediately before us is :

The culture of the body and the development of the mind as applied to schools.

It may be safely laid down.

1. That the child works too soon.

2. That he works too much.

3. That he works badly and often under unhealthy conditions.

That a child works too soon, who will doubt ?

The work of the mind is more fatiguing than that of the body. We must not think that the pure

and bright flame of intelligence will burn without consuming itself. If it be immaterial in its nature, it requires a *material aliment*, and wears out the organic lamp that consumes the oil of life, "ex nihilo nihil fit;" besides, muscular effort works out its own repairs, it gives an appetite, and good food will repair the loss, but the work of the mind tends to depress the vital functions, and so prevent their restoration. This fact Monsieur VELPEAU announced at the congress at Lyons in 1857 in these words, which have since become an aphorism. "Once destroy the balance between the mental and physical condition, whatever you gain in intellect you pay in tubercles."

Agriculturists know full well that if young animals are set to work too soon, they destroy their form and the beauty of their race, and experience has confirmed this rule in its application to children.

The act of parliament which forbade children to labour under 10 years of age was just and good, but it is not less injurious to put a young child to severe study.

You must first give the intellect a *steady seat* in a healthy body, and then we may expect a good reward.

At the railway pace at which we go, we have only the shadow of a body, health goes for nothing, natural intelligence for less. To make Latin scholars at 7 years of age and book-keepers at 12, Mons. FONSSAGRIVES calls "murderous pride" which leads parents

to sacrifice their children by a precocious success and to destroy their health which perhaps may never return. Besides this, we must not forget the reciprocal influence of manual and mental labour.

Life is a mystery. OVID says, "*Causa latet vis est notissima.*" Organization co-exists with life :—the various tissues have their uses, and every organ in the body has allotted to it a special function. It is a mechanism which begins, increases, lasts only a few short hours, perishes and passes away, and this is the sum of human life upon earth !

How to improve these few short hours Dr. WATTS told us as little children ; and ever since, and indeed long before, the subject has been the theme of the philosopher and the divine.

In the year of grace 1874 it has come to us in the tangible form of an act of parliament, which tells us we must keep our houses clean and instruct our children.

The first duty of a good citizen is to obey the laws of his country, and with intelligible rules before us, we have no difficulty in gaining many benefits for ourselves and conferring many on our neighbours.

Some of the great men of former days had a Herculean frame as well as a great mind, so much so, that a learned French writer calls PLATO divine, notwithstanding he had broad square shoulders and a robust constitution ; and goes on to cite BUFFON,

Marshal DE SAXE, MIRABEAU and others as remarkable examples.

The great DR. JOHNSON, was great in this respect also, and yet it is rare to find such men; for by occupation in the various ways of life, it is very difficult to preserve the equilibrium; indeed the balance will incline one way or the other according to our work, or in other words "use becomes second nature." Yet there are some so naturally constructed, that there is a great development of the intellect, or the contrary.

When Napoleon was young (shortly after the episode of the "Pont d'Arcole") his portrait was shown to LAVATER, who at once exclaimed "the upper part is an Eagle, the lower a Tiger.

VOLTAIRE said, "I shall die without ever having written a line according to my taste," and Colonel OUDET eloquently wrote "that human thought loses all that it has divine when it is imprisoned in a quill, and drowned in an inkstand."

J. J. ROUSSEAU, a strange combination of talent and tenderness, satire and suffering, wisdom and folly, was tritely summed up by Madame DE DEFFAUT who said, "*Quand la nature forma ROUSSEAU, la sagesse petrit la pâte, mais la folie y jeta sa levain.* He died in 1778 aged 66, and VOLTAIRE in the same year.

Anecdotes are related of our own celebrated men which go far to show that mind holds dominion over matter to such an extent, that we sometimes entirely

forget our own duties and requirements, for instance, Sir ISAAC NEWTON frequently omitted to dine, and when reminded of it, replied that he thought he had done so: that he had two holes cut in his door, a large one to admit the cat, and a small one for the kitten; that he was one day so absorbed in his subject that he burnt his legs in front of the fire, and rang violently for his servant to fetch a mason to remove the grate further back, when the servant suggested that it would be better for him to move his chair.*

An invalid is the plaything of all that surrounds him, "*un souffle, une ombre, un rien, tout lui donne la fièvre,*" (a breath, a shadow, a nothing, everything disturbs him.) He does not want to ask if there is more or less electricity in the air, whether it is bright or cloudy, or where the wind is; his delicate frame tells him all this and he covers himself up accordingly.† Only a ship well-built and well-manned can brave the fury of the ocean. How then shall the frail susceptible over-wrought nervous body be able to resist the storms and troubles of life?

We can measure the force of muscular power, but not that of the mind; it is intangible, incomprehen-

* The biographer of POPE says that he called up the female servant who waited on him at Lord BOLINGBROKE'S as often as four times in the night to supply him with paper and writing materials, notwithstanding his desk was placed on his bed at day-light every morning.

† The Sybarites banished all the cocks because they awoke them too early.

sible, and yet evident and overwhelming. We cannot measure feelings by figures.

FERNEL, who was physician to Catharine de Medicis, said, "a capite fluit omne malum," and TISSOT, "l'homme que pense le plus, est celui que degere le plus mal," and *vice versa*.

"Life is, says MARTIAL, "non vivere, sed valere." The influence of mind over matter is incontestable and apoplexy is a very common termination of the lives of clever men who neglect the precautions we desire to inculcate. ROUSSEAU, DUMBENTON, SPALLANZANI, CABANIS, CORVISART, LA BRYERE, PETRARCH, and died of it. A witty French author has said that the first attack is, "sommation sans frais," the second "sommation avec frais," the third "prise de corps." Notwithstanding this NEWTON lived to the age of 95, but we hear he lived quietly and simply, frequently taking only a little bread and wine.

It is said that MICHAEL ANGELO when he painted the Sistine Chapel, could see nothing on looking down, and when he read a letter he held it over his head.

MONTALIVET goes farther than MONTAIGNE in the estimation of health, he says,

"La santé est l'unité que fait valoir les zeros de la vie."

REVEILLE' PARISE wisely and ably demonstrates "that nature is as inexorable as destiny." She yields nothing, and will have her dues, which we all must pay, but he who pays the last often pays the dearest.

He says of himself, "I live and soon shall live no more." At one time I live full of strength and vigour, at another illness which I have braved, insults and attacks me; my body perishes, it withers, is worn out and declines; and yet the elements remain the same, nothing has changed about me, and why this difference? *It is precisely in proportion to the power of my organization which regulates the functions in the active periods of life;* and thus it is, always and everywhere that "Life contends with death."

Nature has provided us with the double lever of pleasure and pain. This is a great and beautiful law of all organized beings. That which is necessary to our existence gives us pleasure, and the absence of it pain. A want having been satisfied, the feeling of pleasure which succeeds it, is the most formal and conclusive evidence.

EXERCISE.

Our organic power is kept up and increased by exercise, and it is deteriorated in two ways:—first, by inactivity and second, by over-exertion.

How is it that those who are indolent and careful not to expose themselves to the changes which nature has destined us to re-act, are less vigorous, less lively and shorter lived than the agriculturist, the soldier and the sailor?

It is true one man will work longer than another without fatigue, but the common rule is, that if you wish to strengthen the organs, physical or mental; employ them,

“Ignavia corpus hebetat, labor firmat.” CELSUS.

Will you keep them in a healthy condition? Commit no excesses—in a word—employ and develop your powers, but do not wear them out and destroy them. But how shall we know it? By our own common sense that it must not be to the extent of fatigue, weariness and prostration. One individual will work four hours and be less fatigued than another who may work only two, so no definite or absolute rule can be laid down in this matter.

We must always remember that it is not one imprudent or hasty act which vitiates a life, *but it is the continuance of little ones* each in itself of no importance; just as a tiny spark if rapidly revolved, or in other words often repeated, becomes a circle of fire; so our little acts of imprudence, or it may be negligence or forgetfulness, or even carelessness always recurring, become painfully evident in our life, and end by determining our character.

Pleasure continued is no longer pleasure, it becomes indifference; the same with the stimulants of alcohol, opium or tobacco.

The same law is mercifully continued to pain. Every painful impression disappears in time, even if the original cause exists,

“L’ame se lasse de ses plaisirs, et s’endort sur les épines.”

If the study of one subject fatigues the mind, we must vary it. SANCTORIUS says that if we divide our studies into three or four subjects, we can work day and night, "*die noctuque perseverare potest*" when with one subject we should be tired in an hour.

It is not given to every man to work like him, and though in principle he is right, yet we must not forget that we require to sleep, according to a modern authority, six or seven hours *continuously* out of the four-and-twenty.

A learned king is reported to have said many years ago on this subject, "six hours for a man, seven for a woman and eight for a fool," and he was not far wrong.

Children and young people require more than this, of which I shall speak hereafter.

The celestial plant of Genius produces its finest fruits only in the bright sunshine, and in a pure and brilliant atmosphere. It was said that the air of Greece made a man a philosopher, but without going so far as that, we may truly say that in a dull climate we have to fight against the atmosphere, and that thought, imagination and intellect lose much of their power.

The splendid exceptions to this rule are explained by a wonderful persistence consequent on a good healthy organisation.

It is said that BYRON was only religious in the sunshine, and that LESAGE, the author of *Gil Blas*, when an old man, was dull in the morning, became gay,

polite, and even brilliant at noon-time, but after that, the activity of his mind diminished to a state of lethargy which lasted till next day.

“Ex-alimento robur, ex-alimento morbus.”

This motto should be written on the doorway of every college and every school, from the Guildhall to the parish workhouse.

The power of digestion, as a rule, is in an inverse proportion to that of the intellect, and yet the stomach is the guardian and protector of health.

Every one has not the eyes of ADDISON who saw “a gout, fever or dropsy lurking in every dish.”

The living matter of an organism is to be extracted from an inert matter and the operation is complex and important.

A celebrated gastronome as a principle leaves hunger to the vulgar, and keeps his appetite to be stimulated by the science of his “chef.”

It is calculated that a rich man who is fond of “good cheer” consumes forty times as much food as is necessary, not that he swallows actually forty times as much as other people, yet that amount is consumed and wasted in the preparation and so forth.

TEMPERANCE IS THE MOTHER OF GENIUS.

We must take care not to confound the appetite of the palate with that of the stomach. “Quod sapit nutrit” is a Syren’s song, to which we must not for a moment listen.

"Semel comedere, angelorum est; bis in die, hominum; frequentius brutorum."

There can be no doubt whatever that we eat and drink much more than we require, and that there is more disease and death from over-feeding, than the contrary, and yet this is not new to us, it is as old as human history.

LOUBIT more than a century ago, gives an account of a young man of five and twenty, who was ill of gout and obesity, and for whom he prescribed active exercise four or five hours daily, he gives full details of his daily work, and he got perfectly well. Indeed four hours active exercise every day is in such cases "a perfect cure."

"Tous les corps ne se ressemblent point." HIPPOC.

This simple aphorism includes every precept of Hygiene, and we must always bear in mind, that as one shoe does not fit every foot, the same remedy does not suit every man.

Between the phlegmatic scholar, the cold critic, the quiet mathematician, the enthusiastic, melancholy artist there is as much difference as it is possible to imagine.

Must we treat the same, a French author asks, "l'impassable FONTAINE, and the irascible VOLTAIRE? This must not be."

Illness is a heritage of the past, whether it comes to us by our own misconduct, or by family influence.

How many young people of promise fail before

their time for the want of common sense and the knowledge of life: or in other words Hygiene!

I do not speak of those whom society "ripens and kills before their time," but of those who wish to make a name and reputation by their works: for instance—we may be well assured that a young man full of ardour and fire, susceptible, ambitious and enthusiastic, but of delicate and feeble body, gives himself over at once to disease and premature death. On the other hand, a young man who is well in health, laughs at the doctor and goes on with his works and his pleasures; his enthusiasm knows no bounds, he meditates, watches, exhausts himself, languishes and dies and often produces nothing, or at least only a very small part of what his genius is capable.

The names of MOZART, PASCAL, BYRON, MICHALON and a score of others come to my mind, to which a hundred may be added.

MENDELSSOHN studied so much that at 10 years he was attacked with a nervous malady, from which he never recovered, and there are well recorded facts that brain work, for the purpose of passing a certain examination, has terminated in idiocy and death.

Do you wish to make yourself a name and reputation?

It is a heavy burden! Consider your health, your means, and the distance you have to travel; fortify the mind, but do not wear out the body. You who have the great treasure we call health, learn to ap-

preciate it and try to keep it, notwithstanding it may produce you little.

If you are ambitious, avoid a life of pleasure; nothing is more opposite. Two things especially are to be avoided by the student. 1. "*De ne pas abuser des vielles,*" take care how you spend your evenings, for unless you do, the brain contracts an irritability which prevents sleep in maturer years. The least noise wakes him, he thinks, meditates, works upon his imagination and does not sleep at all. 2. Look to the stomach, the organ in which decay and old age commence. If this be the fact, how important to attend to it in youth!

It is subject to moral influences as well as physical; an idea makes it revolt, and the disgust or loathing of a certain food, continues perhaps for a whole life: it hates or rejects, or seeks or feeds with avidity; its caprices are known, and the health of the body depends on it. Especially as years go on, one sees the benefits of care in early life. As in every thing, the harvest depends on the culture.

There are instances of fine old age amongst clever men but they are rare, life wears itself out by its own action, and how is it when that action is pushed to its utmost limit? Senators, orators, philosophers and poets, fall into a premature old age in proportion to their neglect of the principles of hygiene in their youth. We must not deceive ourselves; a ruling idea is not easily got rid of. A statesman has always before him the project which occupies

him, and the artist sees constantly his *chef d'œuvre* expanding from its outline on the easel.

Some ancient philosophers lived to a great age, and GEORGIAS who was 108, the master of Isocrates, has told us why: he says "I have done nothing for which I can reasonably reproach myself; my youth does not accuse me, neither does my old age."

ALFIERI says, that in a sunny clime,

"La pianta uomo nasce piu robusta que altrove."

and that man arrives at both the extremities of pain and pleasure.

Cold represses mental effort. VARILLAS had six blankets to his bed in summer and two more in winter, and ARNAUD had eight, "not only warm but heavy."

BUFFON kept his room at 16° RAUMUR, and did not come out of it, and so he lived till 88 years, though afflicted with a very painful and fatal malady.

Continual suffering in one way or other, is the lot of every one who is "touched" with genius, and here perhaps nature is more cruel than the world.

ORDER OF STUDY.

The mind is as free as nature. Who can compress its activity, measure enthusiasm, or weigh out an inspiration?

Let nothing arrest imagination in its flight. Man is the slave and not the master of his genius!

Yet order is necessary in all things, especially in

life, the rule is universal: reason teaches it, and nature shows it; and how does she show it? By the debility of the physical and moral powers which come on after mental work.

The greater the mental effort, the greater weakness of the faculties is the immediate result.

The mind is enchained and imprisoned by a material substance. A few hours of poetic enthusiasm give a terrible shaking to the body, this is "*dura lex, sed lex.*"

HOFFMAN says, "the divine conjunction, when the mind passes from the conception to the production is singularly rapid." "You are on an elevation and do not descend till after having obtained all that the effervescence of the soul, the heat and fecundity of the imagination can produce."

It is thus that genius brings forth its work, that in the brilliant spontaneity of thought and idea, it identifies itself with its object.

It was in this way that MICHAEL ANGELO attacked the marble "with fury" and that ROUSSEAU wrote his verses.

JEREMY BENTHAM wrote down his ideas on scraps of paper and put them on a file.

SIR WALTER SCOTT tells us that six hours is long enough for any man to work at a time in original composition, and attributes his death to working more than that, after his pecuniary losses.

LEONARDI DA VINCI, when he painted the last supper, forgot his food for days together, at other times

he gave two or three strokes of his brush to the heads, and then went away.

“Work with care,” said ANTOIN DE LA SALLE, for he who begins a work is only the scholar of him who finishes it. Immediately that the sun-light of genius retires, or that there is a feeling of exhaustion; retire at once, for all beyond that is wrong.

BUFFON says “go on whilst it shines,” and he in this way sometimes passed twelve hours, which is enormous, VOLTAIRE after writing a play in six days, said, “ma tragedie est finie,” but he adds, “mon ours de six jours, demande six mois à etre leché.”

PYTHAGORAS says, “the smallest atom casts a shade,” so give heed to the minutest beginnings.

How applicable is this rule to the first buddings of the intellect, and how important to remember that the activity of the intelligence supposes a quiet imagination: in fact that the mental qualities should be equally balanced as well as the physical, and that strange and heterogeneous ideas be excluded so that the mind become capable of continued and active research.

Violent impulsive efforts, only wear out the powers in vain, and experience proves that in men of acknowledged ability this is a great defect, which makes a great difference in their work.

At one time the ideas come up too rapidly and cannot be put down in any thing like order; at another, they are to be dragged out as it were one by one. However light or bright, they *should be*

fixed as they come, at other times they are so fixed that they preclude all others.

It is with great difficulty the pen or the pencil will follow the dictates of the mind :—Sometimes, at first the flight is slow and heavy like the eagle, but it soars eventually to the greatest height.

ROUSSEAU always retouched again and again his writings, and MALHERBES it is said, spoiled a ream of paper in making a single stanza, whilst others wrote with such rapidity as LOPEZ DE VEGA who made a thousand verses in a day.

Sometimes the mind gets tired like the body, and SENECA says, “*cogenda mens ut incipiat*” that it must be stimulated or compelled, when it fails. Coffee, wine, alcohol, and opium have all been employed for this purpose, with unsatisfactory results, though it is stated that TURGOT was “most powerful” after he had dined, whilst PITT lived most frugally at his most brilliant moments, and took only one glass of wine “with quinquina.”

Dr. CHAPMAN reports a barrister, who put on a blister when he wished to produce effect.

SHERIDAN says, “if ideas are slow, take a glass of wine, and when they come take another,” and it is well known that his best and most effective efforts were made under the influence of wine.

Mental activity in the ardour of its production, cannot be subjected to the regulation of time, and sub-divided into minutes, for to relegate in this way

our thoughts and feelings, is to convert the man into a machine.

Let each one work according to his own mind, his head and his stomach, and the inspiration which directs the pen or the pencil at the time.

An author identifies himself with his work, and the orator by various movements of the body, drags out as it were the ideas from his brain.

HAYDN was unable to compose when he had on his diamond ring given to him by Francis the second; and BEETHOVEN beat the table fiercely, bent down in "*sminuendo*" and disappeared behind it in "*pianissimo*," but in "*tutti*," the dwarf became a giant.

When MICHAEL ANGELO was asked why he did not marry, he replied, "Painting is a jealous mistress and will not endure a rival."

Thus in every human being, mind is so mixed up with matter that they cannot be separated: the one reciprocally influences the other, it must be so, and will be so: for it is upon a record that will not be doubted, that after the Creator had made the complicated mechanism called man *He* breathed into him the breath of life, and he became a living soul.

PART II.

Locality—Building—Schoolroom—Respiration—Ventilation—“Miasme scolaire”—Ventilation continued—Heat—Light—Short Sight—Position of Pupil—High Shoulder—Instruction—“Kindergarten”—Lessons—Food—Sleep—Recreation—Music—Gymnastics—Baths—Holidays—Rewards and Punishments—Conclusion.

HAVING quoted the opinions of authorities, ancient and modern, on the subject of education, it is time now to descend to particulars, the material facts we have to deal with from day to day.

In the first place, the two most important items which present themselves for consideration, are the locality to be selected and the building placed upon it.

I am not writing now in reference to public schools generally. The school board is quite competent to deal with that subject, but I address myself particularly to the many thousands of schools which are devoted to the education of the great mass of our people.

Air and light are parts of the elements of locality. These must be supplied in abundance, and yet with discretion; for it must be borne in mind that children pass the most important part of their life, subject to these conditions, the period of their rapid growth, when nature is building up as it were together, their mental and physical existence.

We know that some localities are healthier than others; and as it is not given to all of us to select our own locality, and to remove our dwelling to the most healthy spot, so there must be schools for those who are born and brought up in places where the opposite conditions prevail.

Yet even here we can do much to turn aside the evil, and do much to improve the locality in which we live.

A house which is used for school purposes ought to be placed on a gravelly soil, or if that cannot be, then it should be specially drained so that no part of it be damp.

Too often sound principles of construction are sacrificed to appearance.

The house should be substantially built of stone or granite, in preference to brick, because the former are bad conductors of heat, and because the latter is porous. It is true that plaster protects it in modern buildings; but that is only a partial remedy.

The situation of the building should be fronting the south, or south-east, so as to get all the light possible in this dark climate of ours; and this position will accomplish the double object of protecting it also from the prevailing winds, the south-west wind especially, which brings dampness, which is more to be feared than those coming from the opposite, or more northerly direction. In the course of a visit to the Hospital of Berck, where there are 500 delicate and scrofulous children, it happened that at the

time of my visit (September, 1873,) there was not one of that number so ill as to be confined to bed, and yet Dr. Perrochard assured me that a south-west wind which brought the damp, would in three days fill 30 or 40 beds with little patients suffering from various complaints of the respiratory organs.

If the ground floor of a house is used for a school, it ought to be at least a yard above the soil. This is absolutely necessary, and important on every principal of hygiene, and that the room be not too cold in winter, nor too hot in summer.

The foundation should *not* be of a substance to absorb the moisture of the soil, and the interval between the soil and the floor should be filled with dry sand; and when the locality precludes effectual drainage, then underneath the sand there ought to be a layer of concrete, or impermeable cement.

Unless these precautions are taken, it may be accepted as a certainty that fungi will be developed on the joists of the flooring, and tend very seriously to undermine the health of delicate children, who soon complain of headache, giddiness, and so forth.

The roof of every school house should be steep, so that water may run off rapidly: it preserves it from dampness, and to this end, nothing can be better than slate.

As a rule, in all schools, the stairs should be placed at right angles, so that the children who will "come bounding out of school" in spite of our remonstrances, may not slip down. Grave accidents have

happened in this way, by descending rapidly a winding staircase, such as broken legs and various dislocations, to say nothing of contusions without number. Besides this, the steps should be low and broad, and the degree of inclination should not be steep, so that little children may go up and down easily.

Provision ought to be made for young children to take exercise in doors, in bad weather. A large empty room or corridors, well ventilated, may be used for this purpose.

A school is, for the time, the home of our children; and we cannot be too anxious about their healthy condition. "Here it is" says a learned authority in Switzerland, "that they spend a great part of their active life, and acquire that which the paternal roof cannot give: here are developed their most elevated sentiments which form the basis of their career in life.

When a child takes a dislike to a school, his studies, conduct, and morals, are all so closely connected that they suffer alike, and call for the serious and conscientious consideration of the master.

This may frequently be traced to the hygienic conditions of the school.

THE SCHOOL ROOM.

The school room should be in proportion to the number of the pupils, and as pure air is an indispensable condition of health, it may be safely affirmed

that 300 cubic feet of space is the least amount that ought to be allotted to each individual.

RESPIRATION.

Children respire more frequently than adults, and though their lung capacity is of course less, yet for this purpose they ought to count as adults.

For instance, a room ten feet high and twenty long and fifteen feet wide is barely enough for eight pupils and two teachers; if the room were twelve feet high and of the same dimensions, it might be used to contain two more. In fact, all rooms used for school purposes should be twelve feet high at least, thus a room of 20 x 30 feet would accommodate twenty pupils, and one of 30 x 40 double that number.

VENTILATION.

It must always be borne in mind that an adult human being inspires and expires from his lungs ten gallons of air every five minutes; and as the child breathes more rapidly than the man, it is only just to consider, that for educational purposes, he is entitled to consume as much air as a man, especially as he is growing; that is, adding something daily to his material existence. Besides this, he exhales unhealthy constituents in every breath; for he absorbs oxygen from the air, and gives out carbonic acid from his lungs; and thus the oxygen

of the air is diminished, and the carbonic acid increased with every breath we draw.

Six feet square, and 10 to 12 feet high is the minimum space allotted by the authorities on the Continent; and this arrangement supposes an effectual system of ventilation, so that the air may be constantly renewed.

Dr. BEHREND in his work on the diseases of children says, "We have arrived at the means of determining mathematically the deterioration of the atmosphere of the schoolroom," he quotes another learned author who says that "a man absorbs in 24 hours 25.04 cubic feet of oxygen," and cutting off the decimals in applying this statement to children (which he adds is unfair, because children breathe more rapidly than adults) supposing that 50 children are in a room 20 feet long and 20 feet broad with two windows and that they are shut up *four hours only* we shall have the following results: 50 children absorb $50 \times 26 = 1300$ cubic feet of oxygen in 24 hours. Consequently 216 feet in 4 hours. What is the consequence? There remains in the school room at the end of 4 hours only 120 cubic feet of oxygen, or in other words there remains after the 4 hours, only 8 per cent. of oxygen in the air which the children are now compelled to breathe. Besides this, the air contains also the relative proportion of deleterious carbonic acid which has replaced the oxygen.

OERTEL has found by experiment, that in well

ventilated private houses 10,000 parts of air contain :—

of Carbonic acid	.	.	.	8 to 10 parts.
Hospitals contain	.	.	.	14 „ 30 „
Prisons	„	.	.	13 „ 33 „
Barracks	„	.	.	27 „ 53 „
Schools	„	.	.	16 „ 94 „ !!

and what is the result? It is therefore not surprising, that when we enter a schoolroom where there are 50 pupils, we perceive that the air is heavy, damp, and loaded with an unwholesome smell; just the sort of air in fact that Dr. GUILLAUME expresses by the term “*miasme scolaire*.”

These are not the only detrimental changes which take place in the school room, there is the element of heat and also the watery vapour necessary to respiration. This may be more or less loaded with gas or other matters, either in solution or suspension.

Dust for instance always floats about a school room in any quantity. Our nose tells us of the gas, and when a sun-beam darts across the room, our eyes will show us the innumerable particles of dust we are compelled to breathe, even when the children are sitting perfectly still; and the dust of the school room is as hurtful as that of many manufactories, which produce, as it were, insensibly, serious disorders of the organs of respiration. To children of a con-

sumptive tendency it is certainly injurious to a great degree.*

Can there be any doubt of it? Go into a school-room early in the morning and look at the dust which has been deposited every where during the night!—How is this to be avoided or prevented?

1. If there be day pupils, take special care that they wipe their shoes quite clean, before coming into the schoolroom; or what is better, let them put on a pair of slippers kept for that purpose near the door.

2. Keep the floor perfectly clean, let it be wiped over with a damp and not a wet cloth; the object being not to wash the floor, but to collect the dust.

Sweeping the floor as it is ordinarily done, is simply this—the removing the dust from one place to another.

3. In schools of the upper class, carpets are sometimes used, at others floor cloth. The one harbours the dust, the other is cold to the feet, especially in winter time, and when it is new, it exhales a heavy smell of oil. It seems to me that both these conditions may be avoided by using the new production called Kamptulicon, for it is impermeable, agreeable

* It is interesting to note that during the remarkable fog of the 9th of December, 1873, when the mortality from diseases of the respiratory organs in London was doubled, and that a great number of valuable animals died in the Cattle Show, the proportion of carbonic acid in the atmosphere had increased from its normal proportion to 5, and in some localities to 8 in 100 parts, which is a reasonable explanation of the result.

and noiseless to walk upon and I infer durable; or it would not be used for the reading room of the British Museum and other public institutions. In fact it seems to be a great desideratum.

There is another important point to be borne in mind. Children should never leave their damp cloaks or clothing in the schoolroom, that is one source of "*Miasme Scholaire*;" neither should they be thrown in a heap but spread out in a proper apartment, where they may be dried, and afterwards hung up on a peg bearing a given number.

Children in common schools, put their upper garments near the fire, that they may be warm when they leave, this should never be allowed. In every school there should be a peg for every scholar, and if possible, some person to see that every thing is in its place.

Every master or mistress should personally inspect the dress, as well as the face and hands, of every child each morning. After a short time, they would all expect it, and this simple rule will tend much to habits of cleanliness and neatness, so essential to the health and deportment of the pupil.

VENTILATION CONTINUED.

We have seen something of the condition of the air when deprived of its oxygen, and polluted by carbonic acid, dust, gas, and other abominations.

Now we must here endeavour to supply a remedy

or in other words try to make plain the simplest and most desirable plan to be adopted.

Ventilation in schools means supplying a continual current of pure air, in place of that which has been used or deteriorated, and there appears to be two conditions to be observed in doing so.

That the air shall contain a certain amount of moisture, and a certain degree of temperature.

We all know that we can open our windows and our doors; but that is not always satisfactory, especially in the winter time.

Various costly systems of ventilation, heating by warm water and warm air have been tried, and have not always given satisfaction. It is often too hot in one part of the building and too cold in the other, but especially on account of the expense and trouble it has not been generally adopted.

Iron stoves, with a dish of water, are unscientific and practically of little use, and so are the little windmills we used to see in the upper squares of the windows of a room which was supposed to be ventilated.

Dr. GUILLAUME says, "Iron stoves ought to be banished from all public schools," they are soon heated it is true, but they as soon get cold, so the fire has to be continually kept up. The air of the room is soon deprived of its humidity, master and pupils become irritable, and suffer from head-ache, oppression and palpitation of the heart, and these *symptoms recur in proportion to the immediate prox-*

imity of the stove." He then proceeds to say, that a brick stove is best (covered with glazed tiles,) because once hot, it keeps its temperature a long time, and diffuses it agreeably.

A stove should not be raised upon a block, for it will be found on applying the thermometer, that the lower stratum of air is much colder than that above it: children therefore suffer from cold feet as well as head-ache; besides, the blood is diverted towards the head, or rather the brain, which may be attended with very serious consequences.

DARCET says, that when air contains from 10 to 20.00 of carbonic acid, or 5.00 carbonic oxide, it is poisonous. Care must be taken, especially if coke be used, that the combustion be perfect, or carbonic oxide will be spread over the floor, to the manifest danger of little children.

J. L. Mott, of New York, makes a stove which supplies the double purpose of heat and ventilation, and as far as I know, it is the best and simplest, and only wants to be used to be appreciated.

Mons. Frank, thinks it all but perfect. Its construction is as follows:

Beneath the floor there is a tube or canal communicating with the outside of the building for the purpose of conveying fresh air underneath the stove.

This air circulates between the stove and the outer case which surrounds it, the latter being open at the top. The fresh air after having been heated in passing ground the stove, spreads itself in the upper

stratum of the air, and circulates the vitiated air which is there, and this is carried away by a current which is established between the canal or tube under the stove, and also by an opening made in the upper or lower part of the side of the room. This opening, which is closed at will, conveys the air outside by a wooden canal or tube.

The temperature of a schoolroom should be 60° Fah.; this is the most pleasant and agreeable for all our faculties. If it is hotter, it produces lassitude of body and mind; if colder, it is uncomfortably so, especially if we are not actively engaged.

In every schoolroom there should be a thermometer, and not placed over the fire place, but in a part where it would give as near as possible the mean temperature.

In America there are two thermometers in each public schoolroom, placed at two opposite points of the room and at different heights, and the master is required to keep a *Thermometric Journal* during the winter, and to mark the temperature at the beginning, the middle, and the termination of the class.

A vessel filled with cold water, and protected from dust ought to be placed in each public school.

If pure air be necessary for our healthy physical condition, it is more necessary for our intellectual faculties.

In every school, public and private, there ought to be certain fixed principles of hygiene admitted, adopted and carried out, and definite rules hung up

in every schoolroom. They should show how long the hours of study should be continued; when and how long the doors and windows should be kept open, how long the pupils should adjourn to another room, (always desirable if in a town) for this purpose. Whatever plan of heating or ventilation be adopted, the principal must never forget, that he is *personally called upon* to give to this subject an intelligent and careful supervision. Wood, coal, or turf is to be used in preference to coke, which emits a poisonous compound called carbonic oxide.

LIGHT.

We must always bear in mind that an ordinary gas-light consumes as much oxygen as an adult, and for that reason can never in a hygienic point of view, be a substitute for sun-light. A schoolroom should have an abundance of light. A great authority says, one third of the side of the room, and that the windows should open near the floor, in order that the lower stratum of vitiated air may escape when they are opened.

The light should be admitted from left to right, *and never* in front of the pupil's face, nor behind:—the first dazzles the eyes and is apt to produce fatigue and inflammation, and the last to make the pupils short-sighted, as they sit in their own light, and habitually approximate themselves too near to the object before them. Dr. LEIBREICH has written very conclusively on this subject. He says, "short-sight-

ness is developed almost exclusively during school life and rarely afterwards," and that statistics prove that it is caused by the unfavourable conditions of the light to which pupils have been subjected. Besides this "the book ought to be raised to 20° for writing and 40° for reading," and he adds that hardly in any school in England are these rules attended to.

Many of our new schools are built on a wrong principle, the light coming in at three sides at once, being positively hurtful; and Dr. LEIBREICH asks, "have the trustees or architects no misgivings," or are they aware of their responsibility in these unpractical arrangements.

If a black board be used for illustration, it should be placed opposite the windows, so that the light may fall on it.

Schoolrooms ought not therefore to be lighted on both sides, as the rays of light cross in the middle, and dazzle the eyes of the pupils. All the windows should be fitted with rolling blinds.

When gas or artificial light is necessary, its combustion should be made as perfect as possible, and when there is no gas, oil should be substituted in preference to any thing else.

Every lamp should have a shade, not too opaque so as to shade the upper part of the room, and yet sufficiently so to bear inspection without inconvenience.

Every jet of gas should have a ground glass shade.

POSITION OF THE PUPILS.

On going into a schoolroom, it is very interesting to a medical man to note the position of the pupils.

(As a rule all the tables or desks, are of the same height or nearly so.) Some are sitting improperly ; one holds his head aside, another rests upon his arm, a third hides as it were his head between his shoulders ; some lean upon the forms, others kneel ; their positions are changed from time to time, and the utmost supervision cannot prevent it, and why ? Children sit too long, they are tired and worn out ; and the noise and inconvenience of the changes in their position disturb the order and quiet which ought to exist.

Besides this, the desk that would suit a child of seven is unfit for a person of seventeen : in fact, the school fittings are not adapted to the stature of the pupils.

When a pupil does not sit at ease, the muscles of the back and neck help him to keep up his erect position, but they soon get tired ; especially if there is no back to the seat the body falls forward, the head inclines to one side, and in this way deformity of the spine begins.

A deviation of one part of the spine, balances the equation by another deviation in an opposite direction ; thus it resolves itself into the form of the letter S in every infinity of curve and direction.

It is a farce to make a young lady lie on her back

an hour or two a-day, and when she gets better, to compel her to sit three—it may be six hours in an uncomfortable position, at an unsuitable table, or on an unsuitable seat.

Let a man sit for two or three hours at his desk, on a seat without a back, and he will want to change his position and wish to rest his back. How much more so will a child, whose muscles are tender, and as yet untrained, require rest to renew their strength !

Besides this, the sitting position, when the body is bent forward, enfeebles the digestion, compresses the chest and prevents the free development of the respiratory organs. Hence, watchmakers and engravers are always delicate people, and very frequently die of consumption from this cause.

The position of the pupil, and the suitability of his desk and seat become therefore very important considerations. Indeed the health of a delicate child may be seriously compromised by neglect in this respect. Dr. LEIBREICH has fully recognized this fact as bearing on the organs of sight, and has invented a chair capable of being elevated by a screw to the height required.

He further remarks that (Myopia) short-sightedness and spinal deformity are concurrent from this cause.

Dr. GUILLAUME of Neufchatel, who is in my estimation the best authority on this subject, has noticed that a “full neck,” is in fact, a diminished condition

of gôitre, which is often observed in young children, and has hitherto "passed unnoticed" till now.

The thyroid gland becomes full and is increased in size, and this goes on gradually, till in scrofulous persons, the swelling extends itself to the neighbouring parts which become painful to the touch, and in deglutition also.

He adds, that this comes of the obstruction of the venous circulation caused by the position of the head of the child, who tries to rest it as he best may, when he is tired. When the muscles of the back can no longer support the head, it then rests itself on the spinal column, and that getting tired also bends forward, compressing the contents of the neck, between it and the clavicles and first rib, and so interrupts the venous circulation.

This goes on unperceived month after month, and is in young girls especially, the cause of full neck, for the veins not being able to return the blood, the thyroid gland especially becomes full, and in time hardened, and at length suddenly and unexpectedly it is found that a young lady has a gôitre, or what medical men call bronchocele.

It is a curious fact, that slight cases of this kind always get well in the holidays.

Girls of eight years of age have suffered in this way, after having been at school a year, and though it is true that this affection is more frequent in girls than boys, yet they are subject to it also.

In a public school of Switzerland containing 731

scholars, 350 boys and 381 girls, Dr. GUILLAUME found it in 169 boys and 245 girls, so that more than half the pupils were more or less affected in this way, and he found connected with this condition more or less congestion of the head, which produced the head-ache of which scholars so often complain.

Nature relieves herself by bleedings at the nose, more or less frequent, which add to the general debility.

It is found also that these symptoms prevail most with the weakest and lead to very serious results.

Every instructor of youth should be acquainted with these facts, which come to us by unimpeachable authority.

Dr. GUILLAUME goes on to say, that out of 731 pupils 296 suffered frequently from head-ache and 155 bled at the nose, of all of whom, the ages and circumstances are recorded in his admirable work.

So much for pupils seated on forms or stools without a back.

A child to be seated comfortably should be so placed that his back may be rested, and his limbs being placed at right angles with his body, may be rested also. This is not accomplished by any seats that I have seen in use, or even with chairs. The backs affording support are too high and the seats also, so that the feet cannot be rested.

Looking at the height of the table and the seat, it will be found that the child slips forward as it were on the edge of the seat, that his feet may rest

on the ground, so that in fact he is sitting on the angle of the seat, which ought to support the weight of the body, and this explains the fact, that the child moves one leg forward and the other backward in order to render his position less uncomfortable. This shuffling of the feet disturbs the quiet of the school, when the numbers are great, and calls forth a reprimand, and sometimes punishment by the master.

Then again there is often too great a distance between the forms and the table or desk. Little ones are compelled to rest on the edge of the stool and lean forward on the desk, and thus compress the contents of the chest, and seriously interfere with the respiration.

It is easy to understand that this is the case, and it is one reason why pupils do not hold their pens properly, because they are always uncomfortable, and try to avoid it by moving about.

The height of the table too, has an important influence on the sight.

When a child is comfortably seated the table ought to come to the pit of the stomach, that is, a little below the breast bone, for in this position the elbow will fall naturally on the table. The arm will fall by the side of the body and be at right angles with the fore arm, and this is the best and easiest position.

Unfortunately these conditions rarely exist in schools, either the table is too high, or the seat too

low, or *vice versa*. In some schools the seats are narrow, in others broad, sometimes fixed one inch perpendicularly from the desk and sometimes six inches, and this for young children. In fact this important arrangement seems to be settled by the first carpenter who is called in to fix them.

If the desk or table be too high or too low, the muscles of the eye are over-taxed. Nine to eleven inches is the best distance for reading or writing, the eye ordinarily selects this as the most easy. If too high, the eye is too near the book and induces a habit which we call short sight, and there are no public schools without many cases of this kind.* To

* In the beginning of the present century, Mr. WARE was the first to call attention to the frequency of myopia, or shortsightedness in schools. Since that time, some researches have been made on the subject, but they are isolated and inconclusive.

Dr. COHN of Breslau, is however a very honorable exception.

He examined personally 6059 pupils, and also 410 students at Breslau University.

All the details of the ages, school hours, sickness and treatment of the pupils, are supplied in a most extensive basis of 10,060 pupils of all classes, and as a whole 17·1 per cent had defective sight in some way or other, but its prevalence in various schools, was very disproportionate, thus:—

In village schools	5·2 per cent.	1·4 myopia.
Elementary schools in towns	14·7 „	6·7 „
Middle class schools	19·2 „	10·3 „
Superior ladies' schools	21·9 „	7·7 „
Superior boys' schools (commercial)	24·1 „	19·7 „
Colleges	31·7 „	26·2 „

Of these cases, myopia or shortsightedness, made 10 per cent. of the whole, and were distributed thus, (as in second column), at any rate it appears singular, that this visual defect increases in proportion to the social status of the pupil.

some extent it may be produced by using books with small type, but nevertheless it is a matter of public remark, that many of the pupils of the *Ecole Polytechnique* and other public schools in Paris, wear spectacles.

But there is another and more serious affection arising from the use of high tables, and seats without backs, and that is a deviation of the spinal column, and a displacement of the shoulders.

The affection called in schools "high shoulder" is more common than we think.

In the majority of cases it does not go on to the extent of visible spinal deformity, and often when the high shoulder exists in girls, they try to hide it all they can, and it is only when it can be concealed no longer, that the doctor is called in.

It may perhaps have existed for a year or more, and the deviation of the spine may be trifling, yet it may have become ossified, and require months and perhaps years of judicious care and treatment, and not be even then perfectly restored to its normal position.

It will be seen that the right shoulder is generally the highest, and why is it so?

When the desk is too high, the arm rests on it and pushes up the shoulder, and so the body is bent forward and a proportionate deviation takes place about the loins, in order to sustain the body.

Hence out of 350 boys, Dr. GUILLAUME found 62

cases of deviation of the spine, and in 381 young girls 156 cases of various degrees. Thus in 731 pupils 218 incurred the greatest risk of deformity for life.

It is important to note, that the greater part of these cases were so slight, that they escaped the notice of the teachers, and indeed medical men do not appear to have sufficiently considered these conditions.

In all probability it is because they have never been consulted in a general sense, and have been only called in specially to one particular case.

Dr. LEIBREICH confirms this opinion, and says that short sight goes *pari passu* with spinal deformity, whilst VIRCHOW in his report to the Prussian government, states upon the authority of Mons. EULENBERG, that the records of the public institutions prove that 90 per cent. of all cases of spinal deformity, date their commencement from school life!!

The public school society of New York, have reported on the use of seats without backs, thus: "A stranger interested in education, visited our schools, and expressed his astonishment at the number of cases of high shoulder and deviated spine."

Joseph Lancaster who had a school of 700 children of the lower classes, in which he taught very successfully, found out the necessity of having seats with backs to them, which he introduced into America in 1818, when he emigrated in consequence of the ill-treatment he experienced in this country.

He became the founder of the system of education in America, which has placed it amongst the first nations in the world.

It is well known to medical men that deformity of the spine is much more frequent than it was forty years ago, and how is this to be explained?

The body is maintained erect by muscular power, and as in young girls the muscles are so weak that they become tired even by sitting down, they adopt a habit of leaning or lounging which ends in deformity.

In all large towns children are predisposed in this way, whether by constitutional weakness or otherwise, and these are the children who specially claim our attention.

If we ask the question, are these deviations of the spine caused by the use of seats without backs?—we must say, affirmatively, yes: for seats without backs produce these results in proportion to the inconvenience and discomfort they enforce.

The next question—do seats with backs prevent it? To a very great extent, the answer is, yes: to the extent that they prevent the children leaning and lolling about, in fact in the same proportion as they are more at ease.

If we see a young growing girl rest her body on her elbows, or sometimes one and then the other, can we doubt that she would incur less risk of deformity by a back to her seat against which she could rest?

With delicate children they are absolutely necessary.

Thus children should be placed at tables suited to their height, and not according to their capacity ; and so tables and seats should be made of different sizes, and each table to accommodate not more than four : two would be better, so that pupils may quit their seats with facility and without noise, and as easily resume them. This arrangement also facilitates sweeping, &c., and in this respect the American public schools may be looked upon as models for us to imitate.

In many schools each pupil has a little table to himself, 2 feet by 18 inches ; in others, a table double that size for two, and each table slopes about one inch in a foot. The supports of the table may be wood or iron—the latter are preferable—and are fixed to the floor. The backs of the seats have also an incline of one inch in the foot and extend as high up as the shoulder blade. The seats vary in height from 8 to 12 inches, and in width from 8 to 12 inches for children from four to ten years ; and for children from ten to sixteen years, they are made from 10 to 17 inches high, and from 8 to 13 inches broad : besides this there are certain supernumerary seats to be used as required.

There is a Table published by Mr. BARNARD, of New York, giving the requisite size for every age ; but what is much more to the purpose, is the Table

published by Dr. GUILLAUME, which refers to the height, thus:

Height of pupil.		Height of table.	Height of stool.	Height of back.
feet in.	feet in.	in.	in.	in.
3 0	to 3 3	13·5	7·5	9·8
3 3	„ 3 6	14·7	8·5	10·8
3 6	„ 3 9	15·8	9·5	11·9
3 9	„ 4 2	17·0	10·3	12·9
4 2	„ 4 5	18·1	11·2	14·
4 5	„ 4 8	19·2	12·2	15·
4 8	„ 5 1	20·4	13·1	16·1
5 1	„ 5 4	21·6	14·1	17·2

(It must be borne in mind that the Swiss inch is about 16 per cent. longer than the English inch—11 Swiss inches being equal to 13 English).

Dr. GUILLAUME says that in no instance ought the distance of the seat from the table to be more than an inch and a half, and Dr. LIEBREICH says it should be perpendicular, or in a line with the edge of the desk.

Dr. FAHRNER says, and Dr. GUILLAUME agrees with him, that an upright or inclined back to a seat is not enough; it should project inwardly to support the loins, and be parallel to the spinal column; that is to say, it should be convex to support the loins and slightly concave at the shoulder blades.

Dr. GUILLAUME had all the seats at the *École Prémière*, Neufchatel, altered in this way, with excellent results.

Every pupil coming to a school should be measured as to his height, and be placed at a suitable table

accordingly. This should be repeated every six months, so that each scholar be placed in a satisfactory position.

These considerations cannot be too strongly insisted on in all educational arrangements, especially in new schools, public or private.

The seat of the master or mistress should be elevated and not in a corner. It should command a view of the whole room, and be of a nature to inspire obedience and command respect.

Another important question is the construction of water-closets, and accommodation of that kind. This ought to be arranged without the necessity of the pupil going from a warm room into the cold air: hence it should be of easy approach to the school-room, and shut off by a double door. The windows ought to open to the outside air, and be kept open, and the floor should be of some non-absorbent substance, such as slate, and a valve which shuts of itself, when a person leaves the seat, ought to be introduced, as the expense is nothing compared with the advantage. But these matters may, as a rule, be left to the sanitary engineers.

The same daily attention should be paid to this department as to any other part of the house. And whilst on this subject, I cannot do better than recommend RICHSON'S *School Builder's Guide*, whose constructions have been very satisfactory in the United States. On this subject consult also the work of Mr. BARNARD.

INSTRUCTION.

At length we come to the important question of Instruction. When should a child be sent to school? Competent authorities have decided that before a child is seven years old, he has no sufficient intellectual development, to enable him to profit by his lessons. It may further be taken as a rule, that a child ought not to study till the period of second dentition.

Dr. PALDANUS, who is an authority in these matters, says, "that children who have had no instruction at all, till they are seven years old, make better and more satisfactory progress than those who have been prepared from the age of four or five. These become apathetic and careless, and those who had given the brightest hopes, stop short and fall into the rear of others of less ability—another version of the tortoise and the hare." Thus he advises parents to give their children no preliminary instruction.

It is folly for a parent to hasten the education of a child, in the hope that he may have "finished" early, as the term is, and so be able to enter a profession. This is worse than folly; it is to sacrifice a child to a parent's vanity.

Dr. SCHRAUBE says, that if we treat the physical condition in this way, that is, give a child of tender years nutritive food, rich in azote, or, in a word, the food of a man; we produce the troubles of indigestion and an abnormal nutrition.

FRÖBEL, on the other hand, says this does not militate against the system of Infant Schools or *Kindergarten*, where the little ones amuse themselves and learn at the same time, and where they do not sit on low stools without backs for hours together.

Little children of four, sometimes will read fluently, repeat hymns and sing the tunes, and parents think them wonders. Experience shows that they drop into the rear as they grow older.

THE KINDERGARTEN, OR CHILDREN'S GARDEN.

“Mutter ist der Genius der ersten Kindheit.”

FRÖBEL, born in 1782, was a pupil of Pestalozzi, and left us the legacy of the Kindergarten.

He thinks that children from three years of age, may be instructed, in a way specially described by this term, not by book learning, but by association and agreeable instruction, in the open air as much as possible. He says that 10 square yards are required for each child; thus 120 yards for twenty scholars, and that they should be divided into three classes, thus: 2 to 4 years, 4 to 6 years, and from 6 to 8 years.

VISIT TO A KINDERGARTEN.

I paid a visit to a Kindergarten, at Paris, containing 60 children, in two classes, from 3 years to 7 or 8—all girls. It was astonishing to see how happy the little ones appeared in their work. I there saw them solve many of the elements of geometry, and

prove that they knew them by describing the curve, the angle, the plane and the sphere, as they appeared in a line of stenography ; and all this they had learnt without a book and by amusement only. A child of 7 years of age, read a stenographical phrase in natural history, though she could not write a dozen words. There is a work, specially devoted to the Kindergarten, to which I must refer for further details.

HUFELAND, on the other hand, has laid down the following rules, which ought to be known by heart by every parent and by every teacher.

1. The first object to be kept in view is, 'to promote the development of the organs, especially those upon which the duration of the physical and moral life depend, to exercise them properly, and to make them as perfect as possible.' And what are they? 'They are the stomach, the heart, the vascular and nervous systems.'

Healthy lungs depend on the use of pure air, aided by speaking, singing and running. A good stomach is acquired by putting nothing into it but wholesome food, nourishing and easy of digestion, neither highly spiced nor stimulating.

The health of the skin is maintained by cleanliness, frequent washing, baths, and the enjoyment of fresh air in a moderate temperature, and lastly by exercise.

2. Before we try to develop the physical and moral faculties we must be assured of the general healthy

condition of the body. This is the basis of all education and, indeed, of life itself.

Baths, pure air and exercise, are three objects never to be lost sight of, and they are the best we can employ.

3. Moderate changes of temperature do no harm, but on the contrary, do good; they assist nature to reassert her own powers of dominion: and the same may be said of exercise, carried to the point of what the author calls 'light fatigue.'

4. The clothing should be loose, clean, and free from pressure of any kind, and be suited to the climate.

5. Nourish the vital powers. Habitual exercise in the open air, is the best way to do so. Fortify the *vis medicatrix naturæ*, and you will avoid the necessity of applying to the doctor, for if you go to him for every trifle, you will lose the habit of self-reliance.

6. From the beginning, moderation must be strictly observed as to diet, both in quality, and the way in which it is eaten: this habit will become a "law for the future" and make life longer and more pleasant."

In all these matters HUFELAND is a great authority. He differs from MONTAIGNE, from LOCKE, and from ROUSSEAU; he has taken something from each, and yet his system remains his own.

WORDSWORTH says, "the child is father to the man." Man, indeed, receives the heritage of vigour or debility, of health or illness, which his childhood

has bequeathed to him ; and therefore we cannot be too careful to watch over this decisive period of life. In this respect, a day of childhood is worth a month of adolescence, in its influence upon his future health.

LESSONS.

I am not about to write a treatise on Education, but I will say a word or two.

Dr. PALDANUS says, the “ quintessence of scholastic education is the love of study, and the power to devote one’s self to it.” Let us do less of grammar according to our present system, and teach more by attractive lectures. Let us explain the classics, not altogether by the rules of syntax, but in an æsthetic point of view, and dwell on the beauties and the noble ideas they represent. In history, review the fine characters it offers to us, and bring before the minds of the pupils, the manners and customs of various epochs, and take care not to disgust them, by making them learn mechanically, by heart, chronological dates and long rules of rhetoric and grammar.

I may here remark that young girls are subject to nervous excitement on the occasion of any special examination or display, even at a concert, of their progress in music. They may be subject to fainting, or even St. Vitus’s dance : but the best remedy is to prevent it by the judicious application of the rules of hygiene. Rely upon it, that nothing that a doctor can put into a bottle can remedy this condition. It

must be the inculcation of sound hygienic principles to conduct such a case to a satisfactory termination.

Concerning the hours of school, Hygiene may say a word.—It is a received axiom that one hour in the morning is worth two in the evening, and common sense tells us that this is true, for the body having reposed and refreshed itself by “nature’s sweet restorer,” comes to its work actually revived.

Dr. GUILLAUME says, “to send children to school at 8 o’clock in the winter is sad and tyrannical.” They are hastily awoke, sent to school half washed, half fed, eating, perhaps, their breakfast on the way, fearing to be too late. This observation applies to public schools, of course, yet I know there are some ladies’ schools where the pupils are woke up about 6, a.m., and made to go into the school, even in the winter time before breakfast.

The first thing a child ought to do in the morning is to have a substantial breakfast: not a thick slice of stale bread and a scrape of butter; a modicum of hot water with enough of milk to colour it, and the least possible quantity of sugar for conscience sake. Cocoa could be introduced at breakfast two or three times a week with great advantage, and it should be made with nearly all milk, or at least half milk, that it may be all the more nutritive. The kind called “Maravilla” I have found to be the best and cheapest for family use. Lower qualities may be had, but the difference in bulk is generally made up with fecula, or potato starch. To this, sugar must always be added.

To all schoolmasters and mistresses let it be known that the body of a child is continually increasing, that its circulation and powers of absorption go on very rapidly, and that during the night every particle of nutrition of the day before has been appropriated, applied, and transformed into a part of the living organism.

To give a child a task when the requirements of nature are not fully satisfied, is folly;—it is loss of time, and, if habitually repeated, has a sad influence not only on the health, but on the character.

Every private school has its own fixed hours, fixed doubtless with the best intentions; though in some cases they are not always salutary.

Children work too long, and work badly, is a maxim laid down by FONSSAGRIVES in his admirable work, but to go into details how and why, would exceed my present purpose.

Food.

To begin with the beginning, I may state that more than one third of the infants born in this country die before they are one year old, and in France, rather more than half. Indeed, in some districts in Normandy, where children are sent from Paris to be nursed, the mortality is frightful, simply from one cause—improper food.

The feeding-bottle is a very poor substitute for the natural food of infants, and the millions of them sold annually, are so many reproaches against the customs of our time.

We are ready with excuses at all times, so is the milkman, who is a practical chemist in his way; and so is the baker who knows the mystery of making white bread out of damaged flour.

So, after all, if our children do not get proper food at school, it is not always the fault of the head of the household, but properly of the legislature, which temporises and permits such things to be.

The food of a child, from 6 to 9 or 10 years, ought not to be the same as of one 7 years older.

A young child has an abundance of the fatty element, and that must be kept up, by an abundant supply of food containing the same. The cherub face of an infant in health is an apt illustration. Bread is the natural food of man, but when it is presented to a child, it must not be hard, dry and stale, in order that the least quantity may be eaten; but it should be about 24 hours old, and well covered with butter, not a mere scrape for conscience sake, but half an ounce at least at a meal. If a little sugar be added to it, all the better. This must not be considered as a luxury, but in reality as an act of economy as well as justice, for if a child is fed well in this way he will require, and in fact eat less meat at dinner time. If a child of 7 years old has milk and water, let him have at least half a pint of milk as it is sold, for we may rest satisfied as a rule that the water is in it or that the cream is out of it. To this also a good supply of sugar should be added.

Cocoa may be added to the milk, two or three

times a week, for the purpose of a change, and if this diet be supplied, I consider that tea and coffee are uncalled for as articles of food, but may be used now and then as a luxury.

Dinner should consist partly of meat, and farinaceous food, such as puddings with fat, sugar, or treacle, alternating them with vegetables and fruit.

One thing we habitually omit in this country, and that is soup, which when well prepared, means the soluble and nutritious part of meat, already half digested; and when we add to it maccaroni, vermicelli, or even bread, it makes the most valuable of meals, for it passes at once into the circulation, supplies both fluid and food without stimulation, and so is converted into a part of the living organism. But this is not all—it will be found by careful examination that children who are fond of soup, will not care for beer. Indeed, our drinking habits are to a great extent promoted by our not taking soup of a light digestible kind at our ordinary meals, and it will be found that it is a great benefit and economy in every household, to accustom the pupils and ourselves also, to its daily use.

Fruit puddings and pastry, as a rule, should be avoided. Beer is not necessary, neither is wine, if the food be good and ample, and if enough soup be given to satisfy even a part of our daily waste of fluid, by the various processes of life.

HUFELAND wrote before the days of teetotalism, and expressed himself thus: “He who deprives his child

of wine, will have assured his happiness hereafter."

Our tastes readily adapt themselves to what we require.

Children are all fond of sweets, and why?—Because the sugar forms the fatty element which they are always consuming, and therefore it is sound philosophy as well as economy to give a child plenty of sugar.

A child of ten years old, should have about four ounces of meat at dinner, with pudding or soup: and if he have meat and vegetables only, then he will require nearly double the quantity.

Bread should be supplied at dinner also.

"Where wheat grows there man flourishes," and as we can give nothing better or cheaper than bread to a growing child, so it ought to be supplied in abundance.

Cheese for young people ought to be avoided: besides such as is sold to schools is hard, deprived of its fat, and is difficult of digestion.

Subjoined is a table showing the relative value of food, from which can be selected the elements of a good and substantial dietary, which may be varied at discretion.

Food being the most important question in childhood, I do not know how I can do better than select a summary on the subject by Mr. CHARLES EKin, F.C.S., who says, "it is deplorable to see how much ignorance still prevails with regard to the nutrition

of the highest of all animals, man," the consequence of this ignorance being seen every day, in permanently injured states of both mind and body, resulting especially during the period of childhood, from a non-suitable, and innutritious diet.

With meat at its present high price, and the want caused by the failure of the potato crop, pressing heavily upon us, we should remember that economical substitutes for both meat and potatoes, are easily to be procured, and that whole races of men, who perhaps have never tasted either, live and live well on other diets, some of which are available for our own use, and suitable to our own conditions.

The constituents of food are *proteids*, *amyloids*, *fats* and *minerals*.

Proteids are gluten of wheat, albumen, and casein of cheese, flesh forming materials.

Amyloids, such as starch, sugar and fat, produce heat and fat.

Minerals are contained in all fresh vegetables; such as potass and soda &c., which are necessary to maintain health.

Mr. Ekin aptly illustrates the fondness of children for sweets, as they require a large quantity of heat-food, and as their imperfect organism cannot easily digest fat, its equivalent is supplied by sugar.

Many tables have been constructed to show the relative value of foods, but his is the most simple, I have made some extracts from it, which will show the relative value of flesh making, and heat giving foods.

It illustrates the fact, that lentils contain as much flesh forming materials as lean meat, and a proportionate element of carbon, which makes them as nourishing as bread and meat. Haricot beans and peas contain *fifteen* times as much flesh-forming material as potatoes.

However, it must be borne in mind that nitrogenous food is not so much required, nor so easily digested by young children as by adults; yet physiologically speaking, it is not necessary to give young children meat every day, if care and intelligence be used, in the selection of their dietary.

Yet whilst I say this; the child must be fully fed, every natural want in this respect must be satisfied, and notwithstanding the "hard times" a proper and nourishing food need not be necessarily expensive. One very important element is necessary; to know how to cook it; and another, to have time to eat it.

Dr. PARKES says, that 30 per cent. of all who consult physicians, owe their diseases to their food, and in many instances they know it; yet are so inconsistent as to withhold that knowledge from the physician when they consult him, or blind themselves to its existence.

It will be seen on the following page that our ordinary articles of food, are widely different in their respective qualities of flesh formers, and heat formers; a most important consideration in the selection of the diet of young children, and of those of a maturer age.

	<i>Nitrogen or flesh former.</i>		<i>Carbon or heat former.</i>	
Isinglass	18	0	...	30
Cheese	4	5	...	37.8
Lean meat	3	7	...	13.12
Lentils	3	7	...	37.3
Peas	3	5	...	33.7
Haricots	3	5	...	38
Butcher's Meat ...	3	3	...	23.3
Pork	2	8	...	22
Egg	2	4	...	16.6
Fish fresh	2	4	...	9.6
Oatmeal	2	2	...	35
Flour	2	1	...	39.2
Barley meal	2		...	40.5
Rye	2		...	38.3
Bread	1	5	...	23.9
Cocoa nibs	1	4	...	68.5
Dried bacon	1	3	...	54
Rice	0	8	...	36
Milk	0	7	...	6.8
Parsnip	0	3	...	8.6
Cabbage	0	3	...	2.6
Potatoe	0	2	...	11.1
Turnip	0	2	...	5.3
Carrot	0	2	...	5.4
Butter	0	2	...	68
Suet or fat	<i>nil</i>		...	79
Loaf sugar	<i>nil</i>		...	42.8
Arrowroot	<i>nil</i>		...	42.8
Apples	<i>nil</i>		...	5.8

SLEEP.

The hours of sleep in children should be determined by their age, constitution, and the kind of life they lead; and if we indulge our children at all, it should be in their sleep, for there is nothing that contributes so much to their health. It is

here nature supplies the loss of the day's exertion, and provides for that to come; only one thing must be kept in mind, children must get up early.

LOCKE says, that if this habit is enforced in childhood, it will not be forgotten when the child becomes the man.

St. FRANCOIS DE SALLES says, "To rise early, preserves you in health and holiness." There is more in the latter part of this phrase, than at first appears, for to lie in bed, and to "idle away" the morning hours, is neither good for health nor morals. Therefore send children to bed early, and make them rise early also.

A child in health will go to sleep, almost as soon as he is laid down, and if this is not the case, there must be a cause for it.

The position too for a child in bed is important, as on it, is passed nearly half his time. A habit good or bad is easily formed in childhood, and the position in bed, is more or less persistent during the day.

If a child reclines constantly on one side of the face, or puts his hand underneath it, he will recline in this way, in the day especially if tired, and the consequence will be that the symmetrical beauty of the face is destroyed, and so as regards the figure.

It is as easy to make a child lie at length in bed, as to roll itself up like a ball.

"Magni momenti consuetudo."

A physician of observation and experience, will

read from the face of a child, much of its history, and can tell how it has been nursed and fed.

Ventilation of the bedroom is all important. Dr. RAOUL has described the sanitary arrangements of "Dotheboys' Hall," much better than DICKENS, and J. J. ROUSSEAU found out that "*La haleine de l'homme est mortelle à l'homme.*"

Dr GUILLAUME eloquently puts the question thus: "Must we recapitulate the laws of physiology to say that a child requires the full enjoyment of his sleep"? Nature tells us so everywhere. Young animals, do not they sleep nearly all their time, and only wake up for food? Even in the vegetable world, the young leaves open later and close earlier than those that are older; and as a child grows older, the necessity for sleep becomes less.

Thus adults require 7 or 8 hours sleep out of the 24, and often, I may say without fear, generally more; and as a rule, a child from 7 to 10 years old who goes to bed between 8 and 9, ought not to be disturbed till seven next morning.

When children work late at night, they go to bed, and sleep "a sleep full of dreams," or are as heavy as lead next morning, and appear not to have rested at all. How is this? The answer is simple, congestion of the head is the cause of it.

It then follows as a necessary result, that if a child does not sleep long enough to rest himself completely, his health immediately suffers. Therefore when children become weak, pale and irritable,

without being ill, take care to see that they have an extra hour's sleep before you send for the doctor.

A child in this condition can get no benefit from all attempts to teach him. A short lesson under favourable conditions is better than a long one ; and more profitable in every way.

SCHOOL DUTIES.

"Le ventre affamé n'a pas d'oreilles." says the fable, and so does intuitively the pupil.

Memory and perception refuse their office, and gaping and yawning show that nature cries for relief.

The face that was just now full of vivacity and intelligence, becomes long, pale and sad, the eye loses its brightness and turns to the clock, when there is one, and watches the hands till they come to meal-time.

This is the too often result of a scanty breakfast. When the clock strikes, every head is up, the eye brightens as by electricity, every one is ready to take his seat.

We all know by experience that the most interesting and eloquent discourse, will become "flat stale and unprofitable after a couple of hours, and if we as adults can apply our attention no longer with profit ; how can we expect children, whose organisation is not yet formed ; to endure more than ourselves.

Therefore three consecutive hours of study, the youthful mind cannot bear.

A change should be made, and manual should be substituted for mental labour, for unless some similar arrangement is made, children will become pale, thin and debilitated, notwithstanding they have the best of food.

Therefore the problem of education is not altogether so simple as it at first appears; for we have to deal with every kind of constitution in the pupils, as well as with the caprices and prejudices of the parents.

Those who will carry out the sound principle of the high and responsible office of instructors of youth; well deserve the honorable name of "The High Priests of Nature."

How often does it happen in Ladies' Schools, where there are young girls from 10 to 15, that some are pale, some are red in the face, and all more or less fatigued with their work. The red face means, not health, but a chronic kind of congestion, the result of anxiety to make progress; and it might be also insufficient food and rest. If you question them about their health and speak tenderly to them, they answer you only with their tears; their nervous system is shaken, and, without care, it will remain so all their life.

There should be more variety introduced into the routine of study, so that the mind rest not too long on any one subject, to fatigue itself.

To write long themes—the events of history, long problems in arithmetic or geography, is to turn human intelligence into a copying machine, and, as Dr. GUILLAUME eloquently puts it: “The mind goes to sleep whilst the fingers work, and it goes on till the body is fatigued, and of course the mind also.”

When a child has not too much to do, he works of his own accord, his duties become a pleasure, and he makes rapid progress: therefore I suggest more walks, more exercise and fewer lessons.

A lecture, for half an hour only, on any interesting subject, *three times a week*, would be well received by any pupils from 9 years upwards, let it be geography, physics, natural science, music, literature,—only half an hour. The young mind would seize upon some idea, carry away some knowledge and be pleasurably engaged withal. It would be equivalent to a recreation.

It is well worth the consideration of schoolmasters in the country, whether a system of gardening could not be introduced with great physical advantage to the pupils. In the Écoles Communales of Switzerland it has been introduced with great success. Potatoes, and other vegetables, have been cultivated by the boys, and distributed to the poor. An attempt also has been made in this way to inculcate lessons of botany, by cultivating certain plants—a modification quite suited to the upper classes and by which valuable knowledge is obtained.

How interesting would it be for the pupils in their

walks in the country to be encouraged to gather certain plants, compare them, ask their teachers for information concerning them, tabulate them in a book kept by themselves under the supervision of a master and then to send the weekly results to a local paper for the instruction of their neighbours.

What a source of satisfaction to all, and a gain to the health and intellect also.

Encourage one of the elder pupils to read aloud some standard work, every evening—say 20 minutes more or less; encourage another to do the same, and so get rid of that *mauvaise honte*, that inaptitude to do any thing one is asked to do. Besides: this is a physical exercise, as necessary as walking. It strengthens the voice, and gives moral confidence, and so fortifies the nervous system.

Ask a young lady to play you an air on the piano, the probability is that she will do so. Ask her to read aloud a passage from MACAULAY or TENNYSON, from ADDISON or from SHAKESPEARE, I think I may say the certainty is, that she will not; and yet I am not alone in thinking that to read well in any language, is the greatest charm of education.

It requires no extraordinary ability to do this. In music there is only one BACH and one PAGANINI; and second-rate music, whatever we may say, we do not like it. The same in singing: every lady cannot be a MALIBRAN or a JENNY LIND.

The great error of the day is to wish to see children shine at once; but it is conclusively proved by

experience, that the most promising frequently drop short in their career, and often end by doing nothing.

Physically speaking, it would be a good plan to give to every pupil, a few minutes relaxation after *every hour*. Where it has been tried, there has been a great amount of energy and good will manifested in consequence, and it is well worth the consideration of every head of a school,—say 8 or 10 minutes, not more.

The body requires a change of position, and nature asserts her requirements in other ways. To expect children to sit quietly and attentively on a stool or chair for three hours, is what we cannot do ourselves unless we are specially occupied.

This plan has been adopted in the public schools of Bâle and Zurich, and they have become infinitely less noisy and troublesome than the others, and hence, as many of us know, the child who has been most restrained, both at school and by his parents at home, breaks out beyond all bounds when he gets his liberty, and so it is with human nature, give boys, (like men) more liberty, and if we give them education at the same time, we need not fear the use they will make of it.

There may be a little difficulty at first in this matter, but eventually it may be made a source of pleasure and a mutual benefit.

Dr. GUILLAUME suggests 10 minutes, which may be spent out of doors when the weather is fine; and when it is wet, in elementary gymnastics within.

HOLIDAYS.

In most schools there is a weekly half holiday on Saturdays and sometimes also on Wednesdays.

Dr. GUILLAUME, who views this question in a truly philosophic spirit, says, that if one holiday only is given, it ought to be in the middle of the week. Its object is that both masters and pupils may rest from their work.

In a hygienic point of view, he says, the day of rest ought to be in the middle of the week, when the work is half done; and, although it has been said that the long rest of Saturday and the Sunday to follow is of more benefit, Dr. G. thinks the contrary. If holidays are rest from study, then they ought to be short and frequent; and if for repose, then long.

Holidays ought to be short in winter and long in summer, for it would be a cruelty to keep a hive of noisy scholars in doors during weeks of fine weather. July, by common consent, seems to be the month selected, and to it an addition of a couple of weeks may be made, to advantage, even if those two weeks be subtracted from the holidays at Christmas.

It must not be forgotten that both masters and teachers require occasional rest. The teacher has been aptly described as a candle that burns itself out in giving light to others.

Dr. PASSAVANT says that we all know, from experience, that man cannot study as well at one time of life as another, and that in youth we learn more ea-

sily than in mature age. A child at 10 years old may learn easily, the year after he may be unable to do so. And this state of things does not depend on idleness ; it may be that he grows very rapidly or he may have worked too hard. In fact, we do not sufficiently take into account that the vascular activity of the child is very great, and that great demand is made, day by day and hour by hour, on his powers of vitality, to add to his organic structure.

When a child has sat for 5 or 6 hours a-day on a stool he is fatigued ; he has little disposition to reflect or to think over anything that he has learnt during the day. This long-continued strain has produced in the child what it would produce in the man—physical discomfort and intellectual lassitude. A child, when he leaves the school, should not write copies or prepare lessons, he should amuse himself in any way his taste and opportunity select.

Dr. GUILLAUME quotes the instance of a child in the delirium which preceded his death, who spoke of his fractions and his sums which always occupied him out of school in the evening ; and his parents, with some show of reasoning, said that he died from having been sent to school.

Dr. BEHREND says, that a vast number of the diseases of childhood are “ the inevitable consequences of a bad condition of the blood, which produces indigestion, constipation and debility. Nutrition is imperfect ; the children become pale, thin, and eventually scrofulous. The bony structures feel it at once,

and the child becomes stunted in its growth, and perhaps rickety. Thus, in children who have not enough of general exercise, the muscles act partially and in groups, and the bony structure being soft and unable to resist them, we have in this way deviations of the vertebral column which are now so frequent in our schools." Mr. WILLIAM ADAMS, a high authority on this subject, is of this opinion, and shows how these deformities arise; and it must not be thought that medical men only have the power to see these things. Mr. PALDANUS, an intelligent schoolmaster, has published his observations, which I briefly summarise:

That amongst these affections we must class the always increasing number of complaints of the eyes—short sight or the contrary, and besides this, a general inactivity and a wish to avoid gymnastics on account of debility. He further remarks, that to find a pupil of really brilliant parts is now very rare; hardly one in a large school; which he explains by stating that there is a certain lowering of the moral and intellectual standard, in opposition to the character of youth, and to this he looks forward with great fear, and terminates by saying that every intelligent schoolmaster should voluntarily assist in extending the principles of scholastic hygiene.

Dr. LIEBREICH, in an admirable lecture before the College of Preceptors, says that myopia prevails amongst boys and spinal deformity amongst girls, in about equal proportions; and VIRCHOW thinks the

one may arise from reading under bad hygienic conditions, and the latter from the habitual position of many engaged too early in needlework.

PUNISHMENTS AND REWARDS.

It is now tolerably well known, that all over the European continent, personal chastisement is forbidden. Notwithstanding this, now and then it does happen; for it is hardly, at all times, possible to avoid it; and, as Dr. GUILLAUME again eloquently says,—it is not by the ferule that we can keep a class in a state of immobility for two or three hours, and do violence to the laws of nature, and nullify the natural inclination which all children have to change their position, if but little; and adds, that if our rules and our lessons were less fatiguing to children, they would make more progress, and there would be fewer punishments.

What is required to keep order in a school of 30, 40 or 50 boys, none but the teacher can know. What patience, calmness and paternal anxiety! What prudence is necessary to restrain his hand, when disappointment and anger may prompt him to express his feelings by a blow, which a child may possibly remember all his life; even if it be not attended with injury to his health. And even if such be not the case, the pupil recounts it to his parents, and nothing will do away with the impression, if ill health supervenes, that it is the result of the punishment.

To pull the hair, or to pinch the ears, is equally wrong, illogical and unsatisfactory; and to rap a boy's knuckles with the cane and to bruise his fingers, is not the way to make him write better; so, boxing the ears is not the way to make the head clearer or steadier, and may go far to destroy the delicate organ of hearing.

It is humiliating to put children in the corner of a room, or to make them stand on a stool, or to kneel for long together: it is all objectionable on the score of health. Whilst I write, I have a neighbour, a chemist, whose right arm is now partially disabled, from a blow received from his schoolmaster—a great moral humiliation.

To make a child an object of laughter or derision, and to reprimand him publicly, and to degrade his position in the school, is wrong.

Far from producing the effect we wish, the humbling of the heart; it attacks his moral character, and puts him out of the honest circle in which he moved, and wounds the self-respect which it is our object to develope, and makes him dissatisfied with his associates and so endangers his morality.

When the humiliation is less, it excites his pride instead of lessening it, and supplies it with dangerous aliment.

Worse than this, and more injurious to the health of children, is the custom of putting them outside the door, it may be in passages where there is a

draught, or confining them in a cold room in winter time.

A dark room should never be used for punishment except for the elder pupils, and what would be better still, avoid it altogether.

To keep children "in" after school hours, ought to be discontinued. It deprives them of their regular food, and exercise, and is very detrimental to their health, and the work children do all those times does not profit them; and it is worth observing that parents willingly consent to this kind of punishment, little reflecting that criminals only are subjected to bread and water treatment, in cases of grave delinquency.

Corporal punishment injures not only the physical condition of the pupil, but has a sad influence on his moral character. Most of us have known pupils, to have become hardened as it were by frequent beating; the physique had been accustomed to it, and the morale had been brutalised. The love and respect for the master are lost for ever.

This want of respect passes from the schoolroom into the family, and thence into the street. Parents, and indeed the public, are not slow to recognize the deportment and public conduct of the pupils of a given school, and to form their own opinion of it, whether for good or bad, and as a rule public opinion is right.

The habit of beating pupils grows upon the master, and makes him cruel. He thinks he is within

the safe limit, but he is often carried beyond it, and this by degrees, insensibly as it were, becomes a part of his character, till he is actually cruel.

The first object of a master, should be to gain the esteem and respect of his pupils, for to conciliate them, is to respect himself; for when he loses his temper, and his countenance expresses anger or rage, the pupils at once perceive it, and the remainder of the lesson is painful and useless. However, it happens that some parents think that no good can be done without a *thrashing*, others positively forbid it, and hence it follows, that if boys are to be thrashed, it falls to the lot of the weak and friendless.

One great element of education is to teach a boy to brave danger, and to bear patiently, and yet how inconsistent we are to try at the same time to punish him by inflicting pain. All great authorities on education, are agreed that corporal punishment ought to be abolished, for its effects are invariably "*pernicious*."

It is a favourite punishment in some schools to compel a child to write a word, say 100 or 500 times; this is bad, the hand gets tired, and a miserable scrawl is the result, to say nothing of the deceit it suggests of getting other pupils to help him.

Parents help their children sometimes in this way, and so tacitly conspire with the pupil against the master.

Every punishment should be directed in a moral

point of view, either intended to restrain or to prohibit some little plan of enjoyment, or some object of pleasure to the pupil.

Routine has such an influence on the minds of teachers and parents, that they stand aghast when something new is introduced, which they had never used in their day. Seats with backs, for instance, who ever heard of such things? and yet the most enlightened teachers, and the most intelligent physicians, have pronounced their opinion most conclusively in their favor.

Committees of public schools, fold their hands, and shut their eyes, and say what was good 100 years ago, is good now, and so *our good old rules and appliances* remain as they were; and it is only at the present day that we begin to rub our eyes and ask ourselves, if we, like the Fairy Princess, have not slept a century.

Some parents and even masters think that it is necessary to fatigue children, and so harden them to fight the battle of life; and that anything short of that, would produce weakness and effeminacy. But how, asks Dr. GUILLAUME, can children become weak and effeminate in a large room, well lighted, well warmed, and free from dust; and using seats with backs to them, which prevent deformity?

On the contrary, good hygienic conditions make children vigorous and robust.

We need not fear the introduction of physical and mental recreation; if it be only that by the depriva-

tion of them, we might inflict a mild sort of punishment, certainly more desirable than corporal chastisement.

REWARDS.

As rewards, for good conduct, extra walks may be taken, little indulgences permitted, which every intelligent teacher will know how to adapt to the ages and condition of his pupils; and if the object to conciliate be kept in view, the necessity for punishment will diminish in the same proportion.

Where the numbers admit of it, it may perhaps be desirable to make a little tour now and then, with some of the pupils, who by industry and good conduct may deserve encouragement.

It would stimulate the others, and if these little trips are taken under intelligent direction, they do an immense good, and offer a large field for instruction.

In Switzerland the pupils of the Communal Schools organise musical and literary soirées, assisted by friends in the neighbourhood; and so raise funds to enable the more deserving pupils, to travel for a few days during the holidays.

Some interesting spot should be selected and a description of it should be given by the master, and illustrated if possible by the sketches of the pupils, so each and all would have a personal interest in it.

Such a work has been published in Switzerland, entitled *Trois Jours des Vacances*, which rapidly passed into a second edition. Besides the contributions of

the friends of education, it contains 29 compositions written by the pupils themselves, which of course implies that their own families and friends will naturally feel interested in the work, and so will it promote good in many directions.

JOSEPH LANCASTER, who was born in 1778, established a school in the Borough Road, at the end of the last century; and although he commenced in a shed belonging to his father, and made his school fixtures with his own hands, he established a school of upwards of 700 children, whom he educated at a cost of a guinea a year, and out of this sum he took 3 shillings for books, and 3 shillings for rewards.

To the little ones he gave hoops, bats, balls, and kites, as well as books and slates; occasionally he gave them a tea, each child bringing his own bread and butter, and this he did at his own expense without the humiliating intervention of charity. He speaks with pride of having taken upwards of 500 pupils out for an excursion, and bringing them back again without trouble or disorder. At length he was "*patronised*," and sent by a committee to lecture on education in various parts of the country, till at last he was treated as he expresses it, "as a hired servant," and so he turned his back on his country and sought a new one in America, where he landed in 1818. There he laboured for 25 years, and may be called the founder of their system of education, which is the admiration of the world. In our country, alas! we are in this respect a century behind

our neighbours. Any man can open a school. A ticket-of-leave man may do so to-morrow. The records of our police courts show that lately, a convicted swindler opened a school for young ladies, and that a schoolmaster was convicted of manslaughter by "thrashing" and starvation; and whilst I write, a "Reverend" is in prison for swindling, by means of an "Educational College" in the north of England. The school board is only one step in the right direction, we must now have another—A Minister of Public Instruction.

MUSIC AND SINGING.

Melody and harmony possess wonderful powers to elicit a world of ideas, sentiments, desires and emotions of all kinds; thus singing becomes an important auxiliary in the Hygiene of Education.

The mysterious influence of music on the sensibility, imagination and intelligence, when seconded by other means; as outdoor exercise, or the assembly of a number of children at St. Paul's Cathedral or the Crystal Palace; must have a tendency to refine and elevate the human mind.

The innocent and pure voices of children, who celebrate the wonders of the creation, or the bounties of providence; as FRÖEBEL eloquently expresses it, have more than once caused the tears of mature years to flow, and opened the minds of infants to morality and religion: in fact he goes on to say,

that it represses the bad, and developes the good in all the elements of human nature.

With many children, boys especially, the singing lessons should be elementary, but when the voice is formed, the exercise of it fulfils one of the important conditions of respiration ; it exercises the lungs and improves and extends the powers of respiration, and circulation also.

GYMNASTICS.

Gymnastic exercises have been long held in repute on the continent, and by Germany specially, and I believe that no one will now contest their utility.

In this country, however, the question seems to be relegated to the playground, and pupils may do just what they please in the matter.

The swinging trapeze is the alpha and omega of school gymnastics, both for boys and girls ; it is simple, elementary, healthful and safe. It may be fixed and unfixed in a minute—may be used indoors and is cheap. It strengthens the muscles of the arms as well as the ligaments of the joints. The weight of the body extends the spine and expands the chest, and at the same time gives confidence and energy to the pupil in all childish sports. Mr. WILLIAM ADAMS, in his valuable work on the subject of deformity, fully enunciates this opinion.

SPEISS, an authority on the subject, says that gymnastics should be taught “methodically and gradually, like all the other branches of education.” It has

a gay and happy influence on young people, and varies the occupations of a school. We are all of us creatures of imitation: the little ones will attempt what they see their elder brothers do, and so a kindred spirit will prevail, replete with healthful influence.

In schools the higher exercises should be avoided, and the moderate and rational efforts which exercise harmoniously the various groups of muscles, encouraged; so that in fact these lessons become actually amusing recreations.

If parents could divest themselves of the idea that gymnastics have something to do with an acrobat, and that they are therefore dangerous; then they would begin to understand that they are an important element of education, as they develop the body and produce in the mind, ideas which favour the simple and natural habits of life; and, in fact, tend to make a man more moral and self-reliant, and therefore a better defender of his honour and his country.

It is an insult to our reason, to suppose that the formal walk of half an hour in the morning is sufficient exercise for healthy young people, or that it can in any way be considered equivalent to a course of gymnastics. Indeed, CHARLES DICKENS sneered at it, in one of his illustrations, which shows Dr. PRIM and his young gentlemen going out for their morning's walk, all in prim order; whilst two ragged urchins are provokingly happy, riding upon the rail of a fence close by.

Gymnastics, such as SPEISS and NIGGELER have proposed, may be safely introduced into Ladies' Schools; of which there is, indeed, more necessity than for the other sex; for, if rationally directed, they must tend to fortify the body as well as to give it a graceful and easy movement.

Hygiene requires that gymnastics be taught systematically and regularly in any well-considered plan of education, especially to counteract the sad influence of sitting so long at one time in the class.

Besides, young girls are not permitted, after 14 or 15, that liberty of action in their public recreations which a healthy organism requires, and they cannot enjoy themselves according to their natural disposition; and therefore we are bound by every argument of logic, fairness and sound principle, to give them muscular exercise in another way.

Where this is not done, a sentimentalism, a kind of romantic sensibility, creeps in, and seizes on the body as a kind of parasite. The healthy tone disappears, the face is pale, a morbid susceptibility ensues, and the health is gravely compromised.

Gymnastics may be taught at 8 years old, taking care, of course, to except those who are medically unfit.

In all cases, gymnastics should not be practised till 2 hours after a meal; and lessons to young children should be of short duration and often repeated. Their little muscles will soon adapt themselves to all reasonable requirements. But, as a rule, one hour

every day, summer and winter, should be employed in this exercise.

The exercises should be undertaken quietly and steadily, without haste or excitement, and should be protected from public view.

It would be very desirable that all tutors having the charge of children should understand something of the principles of gymnastics, and in a short time they would be very useful instructors, and thus carry the principles from school to school, and so make popular one of the most important branches of hygiene.

BATHS.

It is not enough to wash the feet and to bathe partially now and then. A complete bath ought to be taken weekly, or at least once a month, and no school ought to neglect it. There are ample physiological and hygienic reasons to support this view, but this is not the place to express them.

Sponge bath and cold bath ought to be used as often as the season and circumstances permit, at least once or twice a week. There ought to be a medical man attached to every school, as part and parcel of it; and to receive a fixed salary, or a capitation fee, so that his advice may be always ready at hand. This is good economy, and sound philosophy.

CONCLUSION.

I cannot too often repeat, that in writing and drawing, care must be taken to see that the desk and seat are adapted to the height of the pupil, otherwise a certain result will follow; viz. a high shoulder or perhaps two, and possibly a curvature of the spine.

Let a schoolmaster or mistress, walk round any school when the pupils are writing, and count the high shoulders.

Then as to the chest, that should never lean against the table or desk; it confines and compresses the organs of respiration. Here we have the cause of congestion of the head, and of myopia, or short-sight.

Oftentimes it is very difficult to make boys adopt the best position; they insensibly fall back into their old habit if not narrowly watched.

SCHREBER found this; and invented an apparatus to prevent it, which he called a "tient-droit"; it is simple, answers the purpose, and costs but little.

I will conclude with an aphorism of HIPPOCRATES, "temperance and exercise constitute the essence of health," and add to it a quotation from PARKES, "that as a rule, educated women take too little exercise, and that as a consequence many are thin, and not round like those who work." He then exclaims, "Were the laws of health and physiology better un-

derstood, how great would be the effect ! Let us hope that matters of such great moment may not be always considered of less importance, than the languages of extinct nations, or the unimportant parts of a dead history."

